

reported that only the smoking of female friends was related to the frequency and amount which the college women in her sample smoked, although her data do not bear on the issue of peer influences at the time of smoking onset. In a study of 11- and 14-year old smokers and nonsmokers, Krosnick and Judd (1982) concluded that peer influences on smoking increased during adolescence whereas parental influences remained constant. McCaul et al. (1982) found that the number of smoking friends and the percent of older siblings who smoked were "consistent and powerful" predictors of future smoking. McAlister et al. (1984), despite the cross-sectional nature of their study, assigned a "dominant causal role" to friends' smoking, as determinants of onset and maintenance in adolescents' smoking.

Pederson, Baskerville, and Lefcoe (1983) studying grade six children, found that peer smoking and peer attitude towards smoking had the strongest relationship to smoking onset. Chassin et al. (1981) reported that the number of friends who smoked was significantly related to smoking intentions for nonsmokers, experimenters, and regular smokers. Similarly, Presson et al. (1984) found that having a best friend or a boyfriend/girlfriend who smoked was associated with stronger intentions to smoke in both their southwest and midwest samples. Hirschman et al. (1984), reporting cross-sectional data, found that those whose best friend and/or majority of

friends smoked were more likely to have tried a cigarette, to have progressed to more cigarettes, and to be smoking currently. Bloom and Greenwald (1984) found cigarette smoking to be a peer-oriented, rather than family-oriented behavior. In their sample of grades five, six, and seven students, of the total regular and experimental smokers who currently smoked, 71% usually smoked with their friends, 18% with their families, and 11% by themselves.

While the strength of the relationship between peers' and adolescents' smoking is not in dispute, the interpretation of the correlation, in the context of smoking onset, is not self-evident. It can be assumed that parents' smoking precedes that of their children, however it is not inconceivable that teenage smokers seek out and befriend other smokers after they have become smokers. If so, a correlation would obtain between smoking status and number of smoking friends, without the latter necessarily being influential in the onset of smoking. Several recent studies, using longitudinal approaches have allowed investigators to clarify the importance of peer influences relative to other factors which may predict smoking. The available data plainly show that peers have substantial influence in the onset process (Biglan, Severson, Bavry, & McConnell, 1983; Charlton & Blair, 1989; Morgan & Grube, 1991; Pederson, 1986; Santi, Best, Brown, & Cargo, 1991; Swadi & Zeitlin, 1988). Biglan and Lichenstein (1984) concluded that "... it is clear that

peer influences are the preeminent factor in the onset of experimentation. The influence is a direct one: adolescents smoke when they are with other adolescents who are smoking. In initial experimentation same sex peers are typically the ones who influence the adolescent to smoke. Adults are seldom present" (p. 218). The excitement, nervousness, and arousal which may accompany the first attempt to smoke, combined with the social dynamics involved (best friends, etc.) may generate a number of subjective experiences, all of which may be attributed to the effects of the cigarette. This misattribution may contribute to smoking's appeal (Eiser, 1985).

Biglan et al. (1985) also argued that peers are instrumental in maintaining smoking, once experimentation has been initiated. The influence is direct and concrete -- consisting of frequent and specific prompts to both experiment with cigarettes and to continue smoking. Friedman et al. (1985) conducted detailed interviews with 157 teenagers concerning the first three situations in which they smoked, or were pressured to smoke. The results showed that initial smoking is unmistakably a social event. Friends, acquaintances, and siblings constituted 88% of all those present when experimentation occurred, and those involved were more likely to be of the same sex. Chassin et al. (1984) found that peer influences were significant predictors of the transition from nonsmoker to trier, and from trier to regular smoker. These peer influences were

stronger in highschool than in middleschool.

Chassin, Presson, and Sherman (1984), elaborating on the nature of peer influences, proposed that peer and parent attitudes were related to initial onset, but not to the subsequent establishment of regular smoking. Those who increased their smoking had more initial peer and parent smoking models. Also, motivation to comply with peers increased subsequent to smoking increases. Thus compliance with peers may be a consequence rather than an antecedent of smoking onset. It is worth noting that self-reports concerning the attitudes of influential others are subject to exaggeration, since such assessments may simply reflect the projection onto others of one's own attitudes. One of the major benefits of longitudinal designs, compared to cross-sectional and/or retrospective studies (i.e., Levitt, 1971; Levitt and Edwards, 1970), is that they permit the identification of variables which may function as both antecedents and consequences of changes in smoking status.

Chassin, Presson, and Sherman (1984) illustrated this fact with the example of smoking peers. Peer influence clearly acts as a precursor to smoking onset. Their data also showed, however, that the number of smoking friends increased between Time 1 and Time 2; thus peer modeling preceded smoking onset, but once adolescents begin to smoke, they may seek more smoking peers. Gordon's (1986) data are consistent with this notion. 'Triers' in her sample were less likely to be in a predominantly smoking peer group than were regular smokers, although triers did have more

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smoking friends than did nonsmokers.

Chassin et al. (1986) provided an eloquent description of the important differences between cross-sectional and longitudinal procedures. The former may confound the prevalence of a behavior (all those engaging in it at a given point in time) with the incidence of it (all those initiating it for the first time). In the case of smoking, children who begin early may be more "deviance prone" than those who do not, or who begin later. The earlier smokers are more likely to have friends who smoke and who encourage smoking. As time passes, these differences become even more pronounced. When early-transition adolescents are included in cross-sectional studies, they are disproportionately represented in the higher grades -- thus yielding a higher correlation between number of smoking peers and smoking status as age increases (Krosnick & Judd, 1982). In their longitudinal analyses, Chassin et al. (1986) dropped long term smokers from their sample with successive increases in grade level. This is especially appropriate when the intent of the research is to identify variables which affect transitions to higher levels of smoking. In doing so, the authors showed that both peer and parental influences predict smoking transitions during both early and middle adolescence, and furthermore that the magnitude of these influences remained constant from grades 6 through 11.

While peer pressure is obviously an important factor contributing to smoking onset, more information is needed about how peer influence interacts with other sorts of variables. Gorsuch and

Butler (1976) have pointed out that due to interactions between variables, it is risky to assume that because an individual has characteristics similar to the mean characteristics of a group of drug users, he or she will be a likely user of that drug. They illustrate this point by describing some findings of Bowers (1968) who showed a strong interaction between personal attitude toward alcohol and peer-established atmosphere concerning drinking. Personal opposition to alcohol generally precluded its use, regardless of peer norms, however a pro-drinking attitude predicted drinking only in the context of an atmosphere favorable to alcohol.

Another potentially important interaction involves psychosocial maturity and peer influences. Most youths in their midteens are particularly sensitive to peer group norms. According to Kandel (1980), "at no other time in the life span does a person interact so intensively and almost exclusively with same-age peers" (p. 276). Realization of the relativity of group norms, and a greater independence of thought develop with age and experience. Increased psychosocial maturity would render individuals less susceptible to peer influences. Both Chassin (1984) and Pederson and Lefcoe (1986) have noted that the nature of peer influence may change over the course of adolescence.

### Changing Sex Roles

On the basis of a survey of over 4 thousand University of Wisconsin freshmen, conducted in the mid 'sixties, Borgatta and Evans (1968) reported what seemed to them to be a radical change in the relative proportions of male and female smokers, compared to previous years. A slightly higher proportion of females than males arriving at college actually reported themselves to be smokers. The authors considered the possibility that this finding was perhaps temporary, and unique to their sample. They also speculated that the apparent increase in the numbers of smoking females heralded a trend toward increasingly larger proportions of smoking women, and identified the increase in female involvement in the labour market as a possible contributing factor.

Recent surveys and reviews make it clear that previously noted differences in smoking incidence between boys and girls (e.g., Grant and Weitman, 1968; Salber, 1961) have disappeared (Evans et al., 1979; Gritz & Brunswick, 1980; Kozlowski, 1979; Reeder, 1977; U. S. Public Health Service, 1976). Johnston, Bachman, and O'Malley (1982) conducted a survey of high school seniors, and report that the overall probability of having ever smoked (lifetime prevalence) in 1981 was about 5% higher in females compared to males.

Evans et al. (1979) present some possible

reasons for the increase in smoking among girls over the past 20 years. One suggestion is that anti-smoking messages have less of an impact on females, compared to males, although the authors acknowledge that there is no empirical support for this claim. Moreover Gritz and Brunswick (1980), after reviewing the relevant literature, concluded that there are no sex differences with respect to compliance in responding to doctors' advice to change smoking habits. Also, Bragg and Hughes (1984) reported that the percentage of smoking nurses is 10% higher than that for women in general. Haughey et al. (1986) surveyed 1,163 student nurses and found that their smoking rates were similar to that of the general female population. Knowledge of health consequences was unrelated to smoking behavior. More importantly, 75% of the student nurses either started to smoke, or increased their smoking during nursing school. In light of these sorts of data, lack of information per se seems an unlikely explanation for women's increasing smoking rates.

Another possibility is that smoking by teenage girls has become more socially acceptable, and therefore girls are now providing more accurate reports of their smoking. According to this argument, young girls are not necessarily smoking more than they used to, they are simply admitting it more often. Again, there is no evidence for this position, but the notion that smoking is perceived to be more acceptable is consistent with the proposition that "...shifts in smoking attitudes



and behaviors [among young girls] reflect broader social forces, including changes in sex roles ..." (Gritz & Brunswick, 1980, p.271). Yankelovich, Skelly, and White (1977) proposed that smoking is simply one of a number of behaviors which, in the past, have been suppressed by prescriptive social norms concerning sex-appropriate behavior. As norms change, the previously suppressed behaviors are "disinhibited". Several investigators have endorsed this line of reasoning. The converging rates of male and female smokers are partly due to the lag between adoption and cessation patterns between males and females (Ferrence, 1988).

Clausen (1968) alluded to a "quest for social power" factor which distinguished female smokers from their nonsmoking peers. Both Bogart (1983) and Reeder (1977) mentioned changes in the proportion of women in the work force, rising educational achievement, and concomitant changes in living habits and family structure as contributing factors to more similar patterns of smoking between women and men. Bosse and Rose (1976) described a decrease in the difference between male and female rates of smoking cessation, which they interpreted as a reflection of increasing sex-role egalitarianism. Previous research had demonstrated that fewer females, compared to males, were able to successfully stop smoking. Assuming that evidence of secular trends may appear more conspicuously among professionals than in the general

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population, Dicken (1978) studied the smoking and cessation rates of public health professionals, psychologists, and physicians/nurses. He found fairly clear evidence of sex-role convergence in the smoking of these professional groups, but not in their cessation rates. In fact, professional women were more likely to smoke than their male colleagues, but less likely to quit. Generally similar findings and explanations were described by Erben (1979) in her review of studies conducted in Germany.

Gottlieb (1982) suggested that smoking may signal sisterhood and unity amongst 'liberated' women, and thus may serve to define a specific social role for the woman smoker. Chassin et al. (1981), in their study of smoking intentions, found few sex differences amongst the predictor variables, with the exception that females placed a higher value on independence. Fisher (1976) has elaborated at length on the notion of smoking amongst females as an attempt to display their "...emancipation and liberation from their tradition-bound stereotype of weakness and subordination" (p. 158). While it is undoubtedly true that women's changing social status is related to their smoking habits, and indeed to substance use in general (Mellinger, Balter, Manheimer, Cisin, & Perry, 1978), it is possible to go overboard with a psychodynamic interpretation. Fisher, for example, claims to have demonstrated that women who smoke "...seem preoccupied with the issue of power" (p. 561). While

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his data showed that female smokers provided a significantly greater number of 'power' themes on a projective test compared to male smokers, the female smokers did not differ significantly from either male or female nonsmokers. His evidence does not warrant the inference of a power preoccupation.

Smoking is, and has been part of our culture, and it is linked with many social situations. Due partly to the women's movement, women are increasingly finding themselves in situations that either promote smoking, or at least make it more appropriate for them to smoke than it has been in the past. Thus it seems quite legitimate to view the increase in sex-role egalitarianism with respect to smoking as a reflection of changes in social values and attitudes. Occasionally, cigarette advertising directed towards women is identified as a possible explanation for the relatively high prevalence of female smoking (Ernster, 1985, 1986; Gritz, 1984). The dramatic rise of female smokers in the 1920's, is also sometimes offered as strong documentation of the power of advertising to alter consumer patterns. The evidence is strong, however, that advertising tends to follow rather than initiate consumption trends.

Schudson (1984) has chronicled the history of cigarette advertising around the turn of the century. He argues that women began smoking in large numbers before any advertising was directed towards them, and concludes that advertising followed a consumer trend -- it did not create it. In

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1923 it was newsworthy that women had begun smoking in public. The prominent coverage afforded the topic by the press probably helped popularize the habit -- partly because the cigarette was a symbol of cultural, social and political change. Advertising may have helped legitimize women's smoking, but it did not cause it. A similar argument can be made today. (Bogart, 1983; Dicken, 1978; Fisher, 1976).

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## INDIVIDUAL CHARACTERISTICS

While there have been several hundred studies investigating possible associations between personality factors and smoking behavior, few have any relevance to the causes of smoking onset. After reviewing the pertinent literature, Williams (1971) was skeptical that research into personality correlates would contribute to an understanding of why children do or do not smoke. Hunt and Matarazzo (1970) were similarly dubious about the chances of learning much from such studies. Both McArthur et al. (1958) and Clausen (1968) concluded that personality seemed more related to the amount smoked, rather than to smoker/nonsmoker differences. Similarly, the authors of more recent reviews do not attach great significance to the role of personality variables in explaining smoking onset (Evans et al., 1979; Flay et al., 1983).

The major difficulty with studies which demonstrate a correlation between some psychological characteristic and smoking is that there is no way of knowing whether the particular trait was present prior to smoking onset, let alone whether it had any predictive validity. As Clausen has stated "...the adult personality correlates of smoking [may] fail to reflect adequately the personality forces that were operative when individuals started to smoke" (p. 375). Wohlford &

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Giamonna (1969) described the dangers of inferring a cause-and-effect relationship from a correlation. For example, a number of studies have demonstrated that extraversion and smoking are directly related (i.e., Eysenck, 1973). It is tempting to conclude that extraversion precedes smoking and has a causal impact on smoking onset. In the absence of longitudinal data demonstrating that extraversion does, in fact, exist prior to smoking, such a conclusion would be unwarranted. Because smoking may perform important social functions (Mausner, 1973) it is quite conceivable that smoking could contribute in a causal way to the acquisition of extraversion.

Another difficulty with comparing smokers and nonsmokers on some personality measure has to do with the interpretation of group differences. For example, a demonstration that smokers are, on average, more impulsive than nonsmokers, does not mean that all smokers are impulsive and all nonsmokers reflective. The distributions of test scores for the two groups overlap considerably, such that attempting to predict smoking behavior from impulsivity scores would be specious. A statistically significant difference may not necessarily reflect a difference of any psychological significance.

Because of these methodological limitations, the absolute amount of information concerning smoking onset and individual characteristics is relatively small. This section focuses exclusively on those psychological dimensions which have

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received the most attention and/or have yielded the most substantive information concerning smoking initiation -- namely locus of control, school achievement/motivation, rebelliousness, and self-image. A section on multiple drug use has also been included. Recent research suggests that prior alcohol use may be an important predictor of subsequent experimentation with cigarettes. Moreover, viewing smoking as just one component of an overall disposition to use drugs in order to alleviate stress represents a conceptual advance over previous approaches.

### Locus of Control

Locus of control (I - E) refers to the extent to which one believes that life's outcomes are contingent on one's own actions or behaviors (Rotter, 1966). Individuals with an internal control orientation tend to perceive events as being determined by factors intrinsic to themselves. Those with an external orientation tend to view events as determined by fate, luck, chance, or manipulations beyond their control. The few studies available are fairly consistent in showing that smokers tend to be more externally controlled than nonsmokers (Smith, 1970).

James, Woodruff, and Werner (1965) found that both male and female smokers were more external than nonsmokers, and that males who successfully stopped smoking were more

internal than those who continued. Hjelle and Clouser (1970) selected college freshmen who were clearly either internally or externally oriented, and found that external females were more likely to be smokers than were internals. The difference for males was not significant. Foss (1973) expected that I-E orientation would be related to cessation rates, and his data showed that more internals than externals had either cut down or stopped smoking within the previous two years. Williams (1973) investigated the preventive health behaviors of 386 ninth graders in a Boston suburb. I-E was associated with smoking only for the girls. Interestingly, smoking was related to general health habits. Nonsmokers were more likely than smokers to use seat belts, obtain sufficient sleep, and get regular dental checkups.

Clarke, MacPherson, and Holmes (1982) studied 1,307 seventh grade Vermont school children, and found nonsmokers to be more internal. Also, nonsmokers who planned to continue to refrain from smoking were more internal than any other group. Penny and Robinson (1986) compared 138 regular adolescent smokers in South Wales with a control group of nonsmokers who were matched on several demographic characteristics. Smokers were significantly more external than the nonsmokers, and also had lower self-esteem and higher anxiety levels. Hirschman et al. (1984) attempted to identify factors predicting movement through the early stages of



smoking. In their sample, 77% of those who had tried a second cigarette progressed to a third. One of the factors characterizing this group was "helplessness", which was defined as a negative response to the question "If you're not doing well in school, do you keep trying to do better?" Strictly speaking, such a measure is not identical to that yielded by the conventional locus of control instrument, however it would appear to be tapping the same sort of internal disposition. In a sample of 10,579 UK school children, Eiser, Eiser, Gammage, and Morgan (1989) found that smokers showed more belief in the importance of "chance" as an influence in health outcomes. Stacey, Sussman, Dent, Burton, and Flay (1992) reported that adolescent nonsmokers were more generally 'self-efficacious' in resisting social influences.

In one of the few longitudinal studies to have addressed I-E orientation, Chassin et al. (1984) found that externality was a strong predictor of transition from nonsmoker to trier, but not for the transition from trier to regular smoker. Cherry and Kiernan's (1976) large scale longitudinal study found that both extraversion and neuroticism were significant predictors of subsequent smoking for both sexes. Seltzer and Oechsli (1985) reported that in their sample of 1445 children tested at age ten, those who subsequently became smokers had significantly higher extraversion scores than those who did not, although the absolute difference between means was not large.

Smith (1969) found that high school and junior high smokers had higher extraversion scores than nonsmokers. Presumably, extraverts are more vulnerable than intraverts to social influences such as peer pressures, if only because the peer group would be larger for extraverts (Chassin, 1984). Similarly, control orientation correlates to some degree with social desirability (Ashkanasy, 1985), which refers to the degree to which one's actions are calculated to gain approval and rewards from others. Thus, both extraversion and an external locus of control may increase susceptibility to adult and peer modeling influences -- both of which have been shown to be important antecedents of smoking onset.

### Academic Achievement

While academic achievement is not typically thought of as a personality trait, the consistent negative association between school performance and smoking warrants treating scholastic achievement as a potentially important factor in smoking onset. The link has been documented as long ago as 1923 (Ravenel, 1923) and as recently as 1984 (Brunswick & Messeri, 1984a). The association is a pervasive one, and has been reflected in measures of grade point average (Veldman & Bown, 1969), educational aspirations (Chassin et al., 1984; Clausen, 1968) truancy (Banks et al., 1978), and study and

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reading habits (Hundleby, Carpenter, Ross, & Mercer, 1982). Bachman, Johnston, and O'Malley (1981) reported that both commitment to higher education and self-reported grades during highschool correlated negatively with smoking. Using Jackson's (1968) Personality Research Form, Labouvie and McGee (1986) found, in a longitudinal study, that lower scores on 'achievement' and 'cognitive structure' predicted earlier, faster and heavier use of alcohol, cigarettes, marijuana and cocaine.

Although the correlation between smoking and scholastic achievement is well-documented, the explanations for it are varied (Reeder, 1977). Newman (1970a), for example, suggested that smoking may be a compensatory act by students who do not succeed educationally or socially. Mausner (1973) proposed that society perceives a utilitarian function in smoking, and thus cigarette use is viewed as a sort of coping mechanism. If so, academic anxiety might predispose students to smoke in order to alleviate stress. Alternatively, Banks et al. (1978) proposed that some teens may reject school and school--associated values in exchange for a youth subculture which would accept, if not encourage smoking. This view is consistent with Pflaum's (1965), who proposed that the negative relation between grades and smoking "...reflects more on the educational system than on the smoker. In both high school and college, smoking reflects a lack of involvement in the scholastic program and an attempt to obtain satisfactions outside the

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school environment. The educational system is perhaps not meeting the needs of the smoking student" (p. 201).

Brunswick and Messeri (1984a, 1984c) refer to these potential explanations as psychogenic and differential socialization arguments, respectively. The authors point out that each interpretation entails a different sequence of empirically testable relationships. The psychogenic approach views smoking as a coping response to academic anxiety or failure. If this view is correct, then declines in achievement should be followed by or accompanied by increases in psychological distress. This, in turn, would increase the likelihood of smoking. Furthermore, if stress is controlled for, the association between poor achievement and smoking should diminish.

The differential socialization approach views the link between smoking and poor achievement as an artifact of a third variable -- namely a conventional, success-oriented outlook towards schoolwork and academic goals. According to this view, a rejection of the dominant value system would result in both higher smoking rates and poorer grades, but should be independent of ability and anxiety. In their attempt to clarify which of these processes underlies the relationship between smoking and achievement, the authors obtained equivocal results. School anxiety increased the risk of smoking among black urban females, but not among males. Differential socialization factors predicted smoking for males, but not for

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females. The complexity of the outcome suggests that school-related socialization experiences may differ markedly across various groups which may only appear to be similar.

Newman's (1970b) study provides another example of a complex interplay between personal dispositions and school-related social influences. He found that junior highschool smokers were bimodally distributed across a 'social status' dimension. The two groups who smoked the most came from opposite ends of the status continuum. Youths in the 'popular' group smoked covertly, and took pains to conceal the habit. The 'hoods', at the bottom of the social status hierarchy, smoked openly and often. Sex differences further complicated the picture, but it is obvious that there was no straightforward relationship between school social status and smoking.

### **Rebelliousness**

Rebelliousness or resistance to authority is frequently mentioned as a motivating factor in the initiation of smoking. Lawton (1962) speculated that lower grades, smoking, and relatively low participation rates in extracurricular school activities were all a reflection of rebellion. Hochbaum (1965) suggested that "... smoking among adolescents represents both a symbolic striving for adult status and a rebellion against adult authority" (p. 693). Similarly, Pflaum (1965) described smoking

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as a 'rite of passage', with the cigarette symbolizing adult status, power and privileges.

Smoking, in and of itself, cannot be interpreted as rebellion in the absence of any independent measure(s) of rebellion. In other words, one cannot argue that adolescents smoke because they are rebelling, and also use the fact that they are smoking as evidence of rebellion. There does seem to be ample documentation, from both cross-sectional and longitudinal studies, linking smoking to a rebellious-like disposition. Stewart and Livson (1966), for example, used teachers' ratings of children's behavior and attitudes towards school as a measure of childhood rebelliousness. They also utilized the California Psychological Inventory to measure adults' degree of conformity to society's mores. Rebelliousness consistently predicted smoking from kindergarten through adolescence, and adult smokers continued to hold more rebellious attitudes than nonsmokers. Subsequent studies, using a variety of different measures, have substantiated the notion that smoking is, in part, an expression of resistance or reaction to parental or adult authority. Clausen (1968), Gritz and Brunswick (1980), and Yankelovich et al. (1977) have all noted negative attitudes towards adult-imposed limits amongst female smokers. McAlister et al. (1984) found that both rebelliousness and disobedience distinguished smokers from nonsmokers in their cross-sectional study, and proposed that disobedient

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rebellious children are more susceptible to peer influence than those who are less resistant to parental influence.

Chassin et al. (1984) have considered rebelliousness in the context of problem behavior theory (Jessor & Jessor, 1977). According to this approach, behavior problems of adolescents indicate premature transitions to adult activities in violation of age norms. Since smoking is generally regarded as an adult prerogative, smoking among children is by definition a "problem behavior". It is possible that the precipitous adoption of adult behaviors on the part of children is a result of a general personality factor. Chassin et al. (1984) found that higher attitudinal tolerance for deviant behavior (which they labeled "deviance proneness") was a predictor of adolescent smoking onset, and of subsequent smoking (Chassin, Presson, & Sherman, 1984). Chassin et al. (1986) reported that sixth and seventh graders with stricter parents were more likely to begin smoking than those with less strict parents, thus suggesting a rebellion motive. In a cross-sectional study of 2,385 junior highschool students, Gordon (1986) found that those who had tried smoking were more rebellious than nonsmokers. Rebelliousness was measured by respondents' self-reports concerning the frequency of antiauthority or antisocial activities (i.e., bothering parents and teachers, in trouble with police).

It is worth noting that rebellion is not necessarily accompanied by a rejection of the values associated with

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academic success. Few studies have systematically examined rebelliousness, school achievement, and smoking status, however Newman (1970a) found no difference in personal achievement expectations between smokers and nonsmokers. Smokers, on the other hand, felt they were not meeting the school's and parents' expectations as often as nonsmokers did. McKennel and Bynner (1969) also found that British school boys who smoked had relatively poor grades, but nevertheless valued educational success as much as the nonsmokers. Rebelliousness and lowered academic performance may both be manifestations of a general disposition towards social deviance.

It is possible that other general personality traits may also contribute to a "deviance prone" susceptibility to smoking. Kellam, Ensminger, and Simon (1979), for example, found that aggressiveness in grade 1 was predictive of drug use (including cigarettes) ten years later. Another interesting finding was that IQ and school adaptiveness were also related to teenage drug use: "... teenage drug use [was] associated with not only early signs of trouble with authority but also early signs of intelligence, readiness for school, and social adaptive capacity" (p. 299). While the sample in their study consisted of low SES blacks, the data suggest that general precocity may be a predictor of subsequent "deviance proneness". Pulkinnen (1982), in a Finnish longitudinal study, found that aggressive-



ness at age eight predicted subsequent smoking for both males and females. Lerner and Vicary (1984) have shown that difficult temperament at age 5 -- indexed by negative mood and high intensity of reactions -- was associated with later tobacco, alcohol, and marijuana use in young adulthood. The traits of aggressiveness, precocity, negative mood, etc. may be indirectly related to measures of 'rebelliousness', and may contribute to the relationship between rebellion and smoking. The presence of such long-term predictive factors is also compatible with the notion of a biological susceptibility to smoking (Eysenck, 1986; Hughes, 1986; Kozlowski & Harford, 1976).

Willingness to take risks is another psychological characteristic which may create additional vulnerability to the social pressures described in the previous section. Moore and Quinlan (1985) have shown that both encountering and complying with challenges involving physical risk (violence, smoking, drinking) are commonplace for grade 7 males and females in Canada and Australia. Some youths may be more ready than others to accede to dares. Hirschman et al. (1984) found that 'risk takers' were more likely to have tried a cigarette, and to have progressed to a second one. Collins et al. (1987) have described similar data. Labouvie and McGee (1986) reported that teens who scored lower on 'harmavoidance' progressed more quickly to heavier levels of drug use. Sensation-seeking is yet another personality dimension which may

predispose youths to experimentation with drugs, including cigarettes (Zuckerman, 1979). Zuckerman and Neeb (1980) reported that smokers had higher scores on the sensation seeking scale, than did nonsmokers, although the relationship with amount of smoking was not linear. Bachman, Johnston, and O'Malley (1981) found three variables which were important predictors of all types of substance use: truancy, number of evenings out for recreation, and religious commitment. "Interestingly, all three have to do with the degree to which a young person is under the direct influence and/or supervision of adult-run institutions -- the school, the home, and the church. Those who most avoid such influence are also the most likely to be involved in all forms of substance use" (p. 67).

### Self-Image

Flay et al. (1983) have suggested that data concerning self-image might provide a means by which the role of personality factors could be tied to smoking onset. Some recent studies have investigated the notion that smoking is initiated, in part, because of a perceived overlap or congruence between adolescents' self-images and the images they hold of smokers. Smoking, it is argued, would help to confirm or maintain the existing self-images of these individuals. Also, smokers' 'images', as described by both smokers and

nonsmokers are sometimes mentioned in the context of advertising, in the sense that adolescents might be motivated to emulate the models portrayed in advertisements. This latter issue will be dealt with more fully in the subsequent section on media effects.

One of the first investigations of smokers' images was carried out by McKenel and Bynner (1969) who asked 5,601 British school boys to rate smokers, nonsmokers, self, and the ideal self on 19 bipolar scales (e.g. tough - gentle). Factor analysis identified three main dimensions underlying the ratings: educational success, toughness, and precocity (referring to a special interest in attracting girls). Smokers and nonsmokers alike associated smoking with toughness. Smokers (but not nonsmokers) also linked smoking with precocity -- a feature which they thought nonsmokers lacked. With respect to educational success, smokers gave themselves a low rating, but gave their ideal self a high rating, suggesting (as noted earlier) that smoking is not necessarily accompanied by a rejection of academic values.

Bland, Bewley, and Day (1975) divided their sample of primary school boys into heavy, light, experimental, and nonsmokers, and had them describe themselves and typical smokers by means of an adjective check list. For all four groups, the image of self was quite different from that of the smoker. The difference was somewhat less pronounced for

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heavy smokers, but still present. Smokers were described by all groups as foolish, untidy, careless, and troublemakers whereas self-images were of boys who were friendly, sensible, good at sports and at schoolwork. As the authors acknowledge, the self-descriptions of smokers may have been idealized, and the descriptions of smokers may have been constructed to match what the boys believed would be most acceptable to adults. If taken at face value, these data show that for children who begin smoking early (ages 10 - 11.5) they do not identify with their own professed image of a smoker.

Chassin, Presson, Sherman, Corty, and Olshavsky (1981) studied the features that ninth and tenth graders believe typified adolescent smokers and nonsmokers. The obtained stereotypes were then compared to ratings of self and ideal self. Of interest was whether the amount of overlap between self descriptions and smoker's would be related to intentions to smoke. The stereotypes of smokers were generally negative, but included some traits that could be construed as social assets. While the authors reported that nonsmokers who had self and ideal concepts that were close to the smoker stereotype were more likely to intend to smoke, the data were somewhat ambiguous. Two measures of intentions were obtained: "intentions to smoke", and "intentions to try a cigarette". Self and ideal concepts predicted intentions for the first measure, but not for the second. It is not clear how or why

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"trying a cigarette" is perceived by adolescents to be distinct or different from "intending to smoke". Moreover, as was pointed out in an earlier section, the role of intentions in predicting actual smoking remains to be clarified.

Barton, Chassin, Presson, and Sherman (1982) also looked at social image factors as predictors of smoking intentions. Sixth and tenth graders rated photographed child models, who were shown either with or without a cigarette, on a 12-item instrument made up of adjective pairs similar to Chassin et al.'s (1981) and McKennell and Bynner's (1969). Once again, the social image of smoking was an ambivalent one. Smoking models were perceived by both age groups to have several undesirable qualities. For the younger group, especially the girls, intentions to smoke were related primarily to the negative features of the smoker's social image. The less negatively they rated smoking models compared with nonsmoking models on several dimensions, the more likely they were to intend to smoke. Positive social assets associated with smoking did not predict intentions for the younger group, although positive image features (especially interest in the opposite sex) did predict intentions for the older adolescents.

Germer and Miller (1984) asked high school seniors to rate the likelihood that a fictional 17-year-old female smoker/nonsmoker would possess various personality traits. The smoker was appraised as having more negative traits than

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the nonsmoker. Respondents were not broken down according to their own smoking status. Grube, Weir, Getzlaf, and Rokeach (1984) used the Rokeach Value Survey (Rokeach, 1967) to compare smokers' and nonsmokers' self-images. All respondents, regardless of smoking status, had value images more similar to those of nonsmokers, compared to smokers. Potential smokers were more likely than smokers or nonsmokers to express value systems more similar to those attributed to smokers, although actual differences between all groups were small. Lastly, Hirschman et al. (1984), while not addressing the issue of image congruity, found that over 70% of 'triers' in their sample reported that they looked "silly or stupid" on the occasion of their first cigarette experience. Dermer and Jacobsen (1986) collected college students' evaluations of smoking and nonsmoking peers. Smoking reduced the favourableness of the ratings, independently of the respondents' smoking status.

Taken together, these studies present a confused, if not contradictory picture. Both smokers and nonsmokers consistently perceive negative features to be associated with smoking, although there are some potential positive traits also indicated. In the absence of any longitudinal data the possibility cannot be ruled out that self-images are a consequence of smoking rather than a precursor. The evidence does not support the claim that smokers are perceived to be

especially attractive or sophisticated and that therefore adolescents elect to smoke in pursuit of these characteristics. On balance, self-image research does not seem to have shed much light on mechanisms relating personality to smoking onset.

### Multiple Drug Use

On the basis of his literature review, Pflaum (1965) proposed that "... smoking represents an attempt to master emotions by creating regularity and predictability. Those most emotionally susceptible to inconsistencies in the emotional and environmental spheres are those most likely to smoke..." (p. 204). Pflaum was suggesting that smoking represents a coping response to stress. Two decades later, Wills and Shiffman (1985) presented a conceptual framework in which substance use in general (particularly alcohol and tobacco) is viewed as a coping mechanism in response to various kinds of stress.

While the recognition that smoking may be engaged in in order to either arouse or relax the user is not new (Gilbert, 1979), the examination of the notions of stress, coping, and multiple drug use within an integrated theoretical framework is relatively recent. Previous investigators have noted a relationship between reported psychological distress and an increased

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likelihood of smoking (Hirschman et al., 1984) and of overall drug use (Crutchfield & Grove, 1984). Kozlowski (1979) pointed out that the use of other drugs is one of the most reliable correlates of cigarette smoking. But the possible interactive effects of multiple drug use have rarely been incorporated into studies on the antecedents of adolescent smoking. Biglan and Lichenstein (1984) reported that frequency of marijuana use was the best predictor of smoking onset in middleschool. Bloom and Greenwald (1984) collected data on 596 children from grades five through seven, and found that smoking and drinking experimentation were highly correlated with one another, and with experimentation with marijuana. The average reported age of onset for drinking (i.e., first full drink) was 8.6 years.

Kovach and Glickman (1986) reported that almost half of their sample of highschool students indicated that they used drugs "to feel better", and a third reported using them "to feel less tense or nervous". Newcomb, Maddahian, and Bentler (1986) investigated longitudinally the value of ten risk factors (e.g., low grade point average, poor relationship with parents) in predicting levels of use of tobacco, alcohol, cannabis, and hard drugs for a sample of highschoolers in grades ten through twelve. The number of risk factors present was predictive of increases in use of all types of substances, for both males and females. The authors suggested that adolescence is a critical period for developing substance-related



coping behaviors in response to stress. They speculated that persons with a relatively low-risk adolescence will not use drugs to handle distress as adults because they would not have acquired such a coping strategy in their teens. Wills (1986) has presented longitudinal data on seventh and eighth graders, showing that increases in stress were predictive of increased use of both alcohol and tobacco. Other investigators have also endorsed the notion that smoking (Penny & Robinson, 1986) or drug use in general (Newcomb & Harlow, 1986) represent coping behaviors which are engaged in in order to alleviate stress (c.f. Allen & Hiebert, 1991; Hansen, et al., 1987; Newcomb & Bentler, 1989; Robinson, et al., 1987; Stein, Newcomb, & Bentler, 1987; Warburton, Revell, & Thompson, 1991). Hadaway, Beyerstein, and Kimball (1986) caution against regarding smoking as an isolated behavior to be dealt with independently, but rather as one of a variety of potential coping responses to the stress associated with the adjustment demands of adolescence.

It is beyond the scope of this report to delve in detail into the literature on drug use in general, however it is becoming apparent that a full understanding of the antecedents of smoking may require information concerning the availability of and attitudes towards other drugs -- licit and illicit. Labouvie and McGee (1986), in noting that self esteem measures in their study were not associated with levels of drug use, postulated an

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